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CACTUS AND SUCCULENT JOURNAL

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FIG. 41. Winding road on way to Agaete in the Canary Islands; habitat of *Aeonium*.

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Hunting Succulents in the Canary Islands

By E. LAMB, F.R.H.S.

I had held a secret desire for several years to go "Succulent hunting in the Canaries," choosing my time to avoid the worst of our world famed English winter! Having made my mind up, dug out all likely material concerning the plants to be hunted, got together such items as small folding boxes, wrapping paper, small saw, etc., I duly made my way to Tilbury Docks one stormy morning in late autumn, a few years before this war—destination, Las Palmas.

It was my intention to make this a holiday trip as well as one of collecting plants, traveling and living as far as possible in comfortable places. This idea did in fact prove very satisfactory and I should not hesitate to recommend it to anyone who thinks that hardship *must always* be the lot of collectors.

On the sixth morning after leaving London the weather was really warm and I shall always remember the thrill of seeing the first peaks of Fuerteventura, appearing as but a few miles away on a deep blue sea. From early after breakfast the first peaks of Gran Canaria were to be seen "Dead Ahead" growing in height as we steamed on. An early lunch and back on deck as we neared Las Palmas.

The approach by sea to Gran Canaria always gives me the same thrill, mountains of many colours, sometimes hazy, sometimes crystal clear. As I viewed these mountains through binoculars I was already exploring!

I had been recommended to stay at a small Hotel in Las Palmas, situated on West Bay, and for a few days at any rate study the most likely places for collecting. Such was my keenness to start, that I could not resist making a small start the afternoon of my arrival.

Grand Canary Island (Gran Canaria) has some quite good roads serving the coast to the north and along the eastern side of the island, terminating in one road in the south. A few roads run inland for short distances but most of these end suddenly in mountainous country, and footpaths or goat tracks are the only means of travel.

Small motor buses (called wawas) ply on many of these roads and a few single decker buses run on the longer roads, but I found the best thing to do was using the mountain tracks until I reached a road served by bus, doing most of my collecting on the way.

There are no true cacti, other than a few Opuntias, but *Euphorbia canariensis* is of such cactus-like appearance as to be taken by many for a cactus plant. *Euphorbia canariensis* can be found in many parts of Gran Canaria, but the finest specimens I found were growing in the dry lava bed of an extinct volcano. This extinct volcano lies inland from Jinama, in the general direction of Santa Brigida, and the well known place of the cave dwellers—Atalaya. The old lava stream runs in an easterly direction towards the sea and the road is cut through the lava between Jinama and Telde. On either side of this lava bed is sand, but very few *E. canariensis* were to be found here apart from odd seedlings.

FIG. 42. Lava bed near Jinama showing *Euphorbia canariensis.*

In the lava a formidable mass exists causing many detours.

I collected a number of fine specimens from this region, they were so solidly fixed in the lava that they had to be sawn off at the base without any roots. They appeared to have nothing else upon which to grow, for the lava here is a solid mass and as hard as concrete. Although I have heard it mentioned that a spiral form of this Euphorbia exists, I found only straight and spirals growing on the same plant, and during the whole trip both forms were on the same plant, spirals being harder to find, however.

Most readers will be familiar with many of the succulents I collected so I do not propose to go too deeply into descriptions, this Journal and other books can provide such additional information in this respect. My intention is to give the reader some idea of the sidelights on a collecting trip which, in my opinion, goes a long way to increasing the interest and makes for easy reading.

When I planned this collecting trip, the following plants were on the list: *Euphorbia canariensis, E. aphylla, E. regis-jubae, Kleinia neriifolia, Zygophyllum fontanesii, Ceropegia fusca,* and *Aeonium, Greenovia, Monanthes,* etc., of many species for which these islands are famed.

Throughout my stay on Gran Canaria, I made Las Palmas my headquarters, using also a small place inland near Tafira for that region. This arrangement allowed me to rise very early, take a wawa to some chosen spot, trek over the mountains by path or goat track and get back to civilization by nightfall. Sandwiches, oranges and bananas kept me going throughout these trips plus a good meal at night.

Having already collected *E. canariensis,* I decided to try one of the more distant parts of the island with nothing special in mind. With perfect summer-like weather (now December) I took the first bus leaving for Agaete. The route to Agaete lies through winding country along the northern part of the island, finishing abruptly at the foot of a high mountain in the north-west corner. During this journey which took nearly three hours, I had an excellent opportunity of planning later trips to such places as Tenoya, Tenteniguarda, Firgas, etc.

A bus journey of this kind is quite an education in itself, as passengers consist of peasants and their produce. During this run we picked up at various outlandish places, men and women of all ages, their children, grandchildren, huge baskets of tomatoes, oranges, bananas, several goats of various ages, and many chickens with their legs tied together. One man had with him an enormous sack from which protruded the heads of small goats through holes in the sack cut for the purpose. When there was no room inside, the driver climbed on top and put various animals on the roof, these sometimes had to be tied to a rack, apparently provided for the purpose, but one thing struck me in particular—I was never allowed to stand in any vehicle. These simple folk seemed to regard it as an honour to

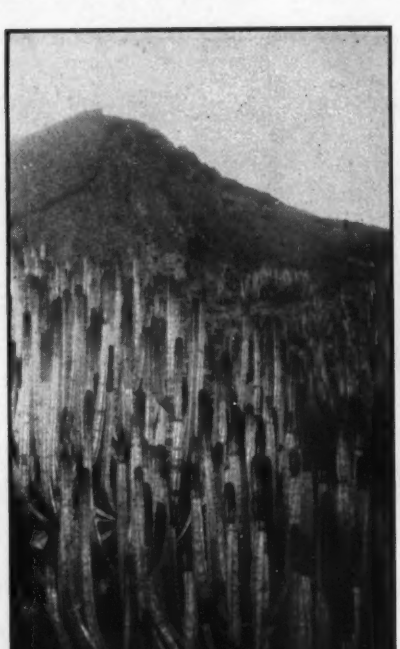


FIG. 43. *Euphorbia canariensis* near extinct volcano.

FIG. 44. Opuntias in flower above Tafira.

give me a seat, or offer me oranges, etc., without charge. In fact they went out of their way to see that no inconvenience was caused me, at times it was quite embarrassing—The Englishman had to have a seat at all costs!

As the bus sped along the last mile or so to Agaete I noticed a plant by the roadside which I felt sure was *Euphorbia aphylla.* Making my way back I found that just off the side of the road were hundreds of this species, they covered the side of a steep slope and in places were so thick that I stood on plants for want of room to walk. This area provided me with all the specimens I needed and although I found *E. aphylla* in other parts, this was a real find. They were all shapes and sizes from tiny seedlings to large bushes. I climbed a good way up this slope and found nothing else except a few odd *E. canariensis,* so having selected the plants I wanted I made my way back to the road and eventually back to Las Palmas.

I made several short excursions from Tafira. The ground here rises about 2,000 feet, and on the highest parts above this village, looking towards the sea in an easterly direction I found in dry rock crevices, *Monanthes pallens.* The only moisture these plants could get, so far as I could see, was from moist clouds which drift over the hills from time to time, leaving behind in a few minutes, everything steaming, as the sun comes out again.

In and around Tafira a lot of Opuntias are found, one is I think *O. ficus-indica,* the other is *O. dillenii.* Although these grow in many parts of the world, from what I have seen, each appears to take on some characteristic peculiar to the locality. *Opuntia dillenii* is very attractive. The pads are firm and thick with golden spines about 1½" to 2" in length. Some of the pads are about a foot in size. I brought a few back with me; they took some packing, but have done quite well. I have found their growth in England becomes rather smaller and is definitely slower than most of this kind, but the spine colour remains.

To be continued

FROM AUSTRALIA

We regret to learn of the death of Mr. Ralph Field's father who enjoyed his hobby to the close of his eighty-fifth year. Mr. Field's picture appeared in the December, 1936 JOURNAL. He started collecting cacti in about 1919 and built up a fine collection of specimen plants from which he shared the seeds with those who expressed an interest. He was well known to all Australian cactus lovers and will be greatly missed.

May 1. Greenhouse now is a mass of *Mesembryanthemum, Haworthia,* and *Gasteria* flowers. 39% more sunshine in January, 23% more in February certainly helped. Gasterias are the answer to the indoor gardener. Mrs. Bakkers' catalogue heading "charming, generally two ranked plants. The leaves are commonly green, mottled with white," satisfies me. The buds began appearing early in February. Checked species, hybrids, varieties, etc. (I have always been partial to true species, but have at times become enamored with the beauties of the hybrids. Now I think true species are few and far between. At present I have spiral, parallel-leaf, rosette, and radiating (fan) shapes. Some are suitable for window-sill, others for greenhouse and ornamental plantings. Thirteen years of records show that I have never lost one plant no matter how I've neglected it. The fact they are pestless, and need little attention, recommends them to me.

May 3. White-washed roof of greenhouse. (White Kemtone is O.K. for palms, orchids, gloxinias, African violets, but not for cacti and succulents.) I usually put speckled whitewash on roof but not this spring—too hot, 86° in shade on April 22. *Gasteria caespitosa* (Cactus and Succulent Journal, July, 1945) in bloom since March 31. One of the loveliest; rosette type, originally called *Gasteria maculata minima.* Prolific offsetter, resembling *G. maculata* in markings but with leaves more pointed and almost cylindrical near the base, and blooms more bell-shaped, less pouched. Soft old-rose suffused with lettuce-green. Does not offset on the bloom stalk as does *G. maculata. Gasteria maculata,* a true aristocrat, has only bloomed once for me. Had two offsets below the base of the bloom section, six inches from plant. Bloom-stalk dried back to the offsets. Still growing after four years; 4 in. across and 5 in. tall. Has one on three-year stalk also. Took 5 plants from last year's stalk so it dried up completely. White blotched, rosette type, dark green and shiny. Too large for window garden. "Glassine edges" are often found in attractive hybrids.

May 7. Gasteria verrucosa, its varieties, and hybrids, blooming. Some have narrow strap-shaped leaves; others 1½ in. wide. Pearled, beaded (or what have you) beyond counting. Ornamental. *G. verrucosa* turns pink to purple in strong light if kept on the dry side. Broad-leafed variety. Had 3 stalks in bloom at once in April. Another verrucosa-type with narrow pearled leaves, sends out stolons which appear at edge of pot. Very pointed translucent tips in semi-rosette form.

May 11. Have two rooted cuttings from a large *G. acinacifolia.* White-blotched, fan-shaped plant. Leaves have been described as "scimitar-shaped" but more nearly spatulate. Gift of Dr. Henry Shetrone, Columbus, Ohio. Doesn't offset as far as I can ascertain. Good window plant but grows large if given room; has a heavy root system. Cuttings still have short split leaves. Let it dry thoroughly, then plant in sandy soil. Takes two to four months to root at 50° temperature. *Gasteria* cuttings (sections, leaves, or offsets) seem to prefer lower temperatures even in summer, the same as regular plants.

May 14. California grown gift from Allan Crogent, local cactophile, listed by dealer as *Gasteria gigantea,* better answers description of *G. spiralis.* Listed as gigantic for *Gasteria* species; 18 inches across and almost as tall. Semi-rosette type. I potted it in 6-in. flower pot. Sheds its lower leaves, which gives it a definite trunk. Bloomed on two multiple-branched flower stalks. Not large. Light red with narrow neck and medium wide pouch.

May 17. Gasteria sulcata, one of the furrowed types. Bought as a specimen plant from Houghton Gardens. Plant now 23 in. across, with leaves 11½ in. long. Books say plants are 5 to 6 in. across. Have it in oval glazed dish with good drainage. Next to this I keep *G. Armstrongii* for contrast. *G. sulcata* has multiple-branched bloom stalk often up to three feet tall. *G. Armstrongii* did not bloom this year, but has a new leaf. Slow grower and non-offsetter as far as I can find. One of the rarest I have. There are hybrids of *Armstrongii* but I have not seen any.

May 20. Repotted *G. brevifolia.* Thick-leaved variety. Mine has roots through drainage hole. Heavily warted, erect leaves. In normal 3-in. depth pot (never use shallow bulb pots for plants of the lily family which have thick, fleshy roots: Haworthias, Apicras, or Gasterias). Rich soil, but not too heavy—3 to 4 parts of the thoroughly rotted leafmold or straw (I prefer decayed straw because of its silicon content (outer glassy layers of straw); 1 part broken clay (screened through ¼ in. mesh); 1 part coarse sand; plus 1 tablespoon bone-meal and 1 tablespoon slaked lime per pot (use 1 to 3-in. pot of each per bushed of soil). If 3 parts of leafmold, sand content does not require as much drainage in bottom. Removed offsets and put in nursery in 14-in. bulb pot, and labeled same. Nothing disturbs me as much as an unnamed plant (I'm not a crank either, Brethern and Sistern—just inquisitive.). I like to know my friends by name.

May 25. Gasteria excavata has decided to stop blooming. Started March 15. Has channeled leaves, and blooms much the same as others. Reddish-orange pouch with narrow throat. Pearls on seed variety in clusters, forming definite, if slightly irregular, stripes. Ends blunt with a "bracket effect" tip on older leaves.

May 27. Repotted *G. obtusifolia.* Leaves thick on one side and much thinner on other. Darker green than *G. excavata* with the pearled effect in more definite bands. Has thick skin, and hard, toothed edges. Makes me understand how these plants can protect themselves. All species thrive for me with little attention (some of my garden club friends claim I'm not a real gardener—my plants do not need any attention). I say t'ain't so brother, just you don't see the love, continued study, experimenting, and methods I use. That's why I water with a hand watering can. My "hospital bay" (thanks to Henry Shetrone for name), contains very few sick, dying, or mortuary patients. But it wasn't always so. I used to have mortalities, too—high percentage, 1 to 10, now it's 10 to 5,000.

May 31. Watered my plants once a week all winter, with a soaking at the roots (set on sand in galvanized trays). Temperature varied between 45° and 55° at night. Gave plenty of fresh air on warm days from February on. *Gasteria* cuttings now showing larger leaves of adult stage. Repotted them in February. *G. elongata, trigona, planifolia,* and *pulchra* are growing well. Think they are true species. Have all of my hybrids along with Gastroleas and Haworthia-garden-hybrids in a separate tray. Delightful, but they're still not true species. Suffice it to say, Gasterias are some of my favorite succulents!

Bryophyllum uniflorum (Stapf) Berger

By J. R. BROWN

Bryophyllum uniflorum is a unique plant among the Bryophyllums known in our gardens, and when well grown is also one of our most delightful and graceful plants, especially so, when during the flowering period the trailing branches bear so profusely the charming, little, urn shaped flowers. Very often, however, due to the fact that it is classed as a succulent, one may see a rather pathetic little plant growing in a small pot and given the same arid conditions required by much more succulent plants, treatment which does not seem to be suitable for much growth, or for it to flower freely, the more equable conditions met in a cool greenhouse, or in So. California, in a cool lathhouse where Begonias, Fuchsias, Rhipsalis and similar plants are grown, and where the moisture conditions are more constant, seem to suit this particular Bryophyllum very well.

A six inch pot or pan is a very good size of container in which to grow a nice specimen, this size will retain a more constant soil moisture, as small sized pots dry out very rapidly during our long hot summers. Several small plants may be put in a six inch pot, as this will give a better proportioned growth in a shorter time, than if only one plant is used. Cuttings may be taken from an old plant right after flowering, these will root readily and if planted and grown along with care, a nice flowering specimen may be obtained the following season. Some growers use a lining of moss in the pot and the soil should be heavily enriched with well rotted leaf mold. The pot or pan is best suspended in some manner so that the beauty of the plant at flowering time may be more fully seen.

Bryophyllum uniflorum is undoubtedly one of the finest plants introduced to American gardens from Madagascar and is slowly establishing its place among our plants now that its culture is becoming better understood. It has long been of interest to the writer to note the fine plants grown by one of our best known southland nurseries, a nursery not interested in succulent plants in particular, but in the better plants of all kinds, and to see the many, uniformly vigorous specimens grown year after year, indicating its appeal to discriminating gardeners.

Bryophyllum uniflorum was described by Stapf in Kew Bull. (1908) 258 and illustrated in Bot. Mag. t. 8286, under the name *Kitchingia uniflora,* later on, Berger transferred it to the genus *Bryophyllum* in Engler & Prantl, Nat. Pflanzenfam. XVIIIa (1930) 412.

Dr. Swingle, who introduced this plant to American gardens, only mentions it as epiphytic on trees, but it grows very well as a prostrate plant under suitable conditions, soon forming a dense mat, roots being formed at every node.

The leaves are almost sessile, ovate to orbicular-ovate, with 1 or 2 crenations, obtuse, 13-16 mm. long, (seldom to 20 mm.), 10-13 mm. broad, and with a narrow, brownish-red marginal band. The leaf color is green when growing under glass but may assume a purple tinge when growing outdoors. This Bryophyllum does not give rise to plantlets on the leaf margins.

Small plants may only produce 1 flower, (hence the name *uniflorum*) or a 3 flowered cyme, but strong, vigorous plants produce cymes of many flowers, 20 or more. The pedicels while apparently very slender, are spreading, and able to support and space the flowers well apart, and it is largely due to this that a plant in flower has so much charm. Like the pedicels, the flowers are also lightly pubescent. The calyx, 5 mm. in length is reddish brown with spreading segments. The urceolate corolla is about 27 mm. in length, with 5 mm. long spreading lobes, and is about 12 mm. in diam. at the widest part. Fuchsia purple, (R. H. Soc. Colour Chart) probably comes close to the color of the flowers, the dark shade of this color, and as seen in flowers developed in the open, as the color loses some of the purple when the flowers are developed under glass.

The following is quoted from a letter by Dr. Chas. F. Swingle and printed in this Journal, II (1931) 415, and is of great interest, as it gives a rather complete history of this particular Bryophyllum.

"The origin of the plant which Mr. West calls *Bryophyllum uniflorum* has been uncertain but I believe it can now safely be classed as a true Malagash emigrant. Its history runs something like this:

"In 1908 the Angers (France) Botanic Garden presented the Royal Botanic Gardens, Kew, with a plant of unknown origin, probably purchased in Belgium. This proved to be very similar to the herbarium specimen collected by Rev. Baron in northern Madagascar some 25 years before. Stapf named this *Kitchingia uniflora* (Kew Bulletin, 1908) and showed a colored

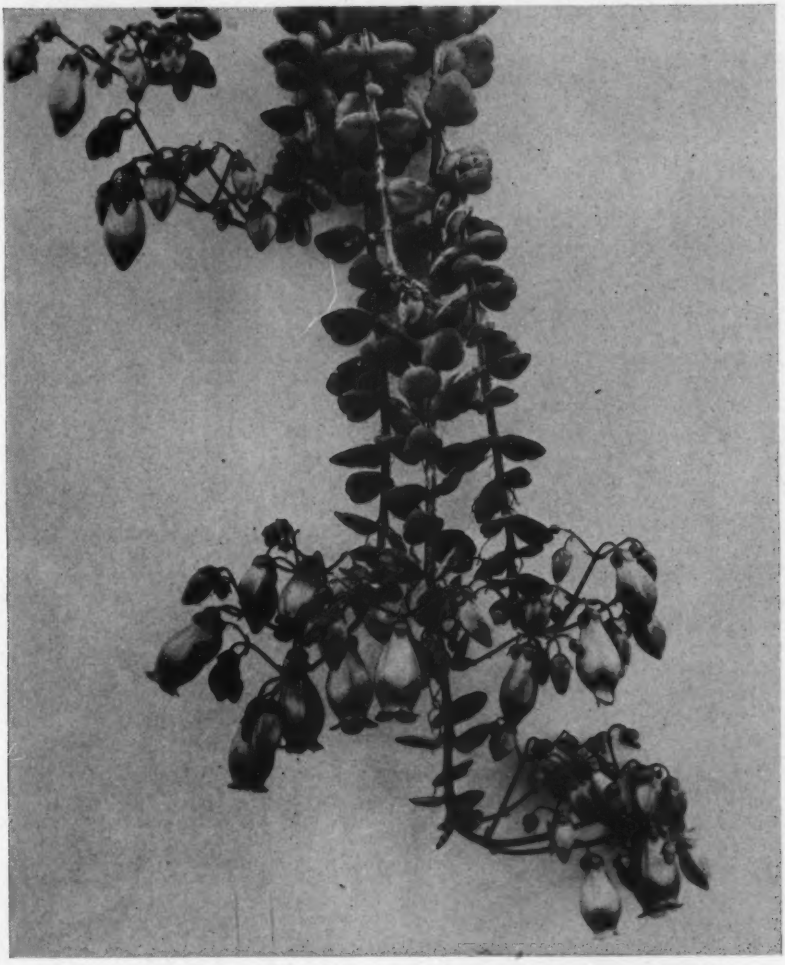
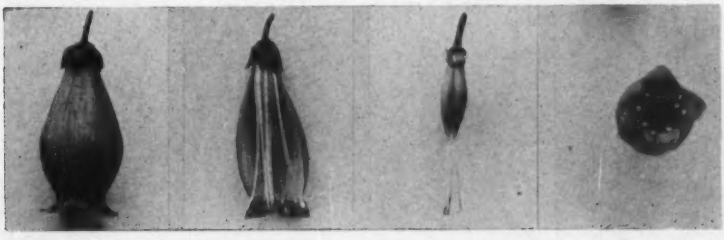


FIG. 45. *Bryophyllum uniflorum* (Stapf) Berger approx. 0.5
Flowering during the late winter and early spring months.



A B C D

FIG. 46. Flower details nat. size.

picture of it in Curtis's Botanical Magazine for 1909. The following year Raymond Hamet showed how this did not even belong in the section *Kitchingia,* and insisted upon the name *Kalanchoe uniflora.* Apparently no specimens ever reached the United States from this introduction into Europe.

"In October, 1928, after the completion of my expedition with Dr. Humbert in southern Madagascar, I left the boat at Diego Suarez, at the extrame northern tip of Madagascar, long enough to make an excursion upon Mt. Ambre. Here at the edge of the tropical rain forest, growing upon tree trunks, I found the plants from which Miss Sessions later obtained her material. At that time I knew nothing of the past history of this plant, but it seemed surely to be growing in its native habitat, and equally surely did it appear that it would find a place in American horticulture."

A photograph of some flowering stems of *Bryophyllum uniflorum* is reproduced here x 0.5, and also some detail photographs of the flower approx. nat. size. A, Flower. B, Flower with front section of corolla tube removed. C, Carpels. D, Throat of flower.

In a paper about *Kitchingia* which appeared in this Journal, XII (1940) 157, the writer stated: "The essential feature of the plate showing *Kitchingia gracilipes* is fig. 3, showing the spreading carpels, as it is this character which distinguishes *Kitchingia* from both *Bryophyllum* and *Kalanchoe,* as in these genera the carpels are united." This last term "united" is misleading, the term connivent or contiguous should have been used, as the carpels only appear to be united, but are only in contact with or touching each other.

AFFILIATE NOTES

Please send your Affiliate Notes to Chas. Place, 5048 Hook Tree Rd., Rt. 1, Box 388 T, La Cañada, Calif.

It was my intention to head this Column with a short account of my impressions on witnessing an Easter Sunrise at Key's View, in the Joshua Tree Monument, but I find that space will not permit, so we will proceed with our regular business.

Tom Gill (Wolverhampton, England) writes:

"I must thank you for giving me the address of Mr. D. Elliott. This was quite a pleasant surprise and I immediately wrote to him. It seems remarkable to be given an introduction to somebody only 50 miles away, by someone else living over 7000 miles away. I've had a nice letter from him too and we hope to collaborate in the future, as I am always pleased to hear little bits of local news from your side."

Best wishes to our one man Affiliate.

Ella Nipper (Pres.) writes:

"The Amateur Cactus Society of Chester, Ill., met at the Coles Memorial Library for their April meeting, Tuesday evening, April 2. The Vice-President, Mrs. Fred Ruppert, had charge of this meeting and Mrs. R. Meuller gave a most interesting talk on *Zygocactus truncatus,* care and culture. She also donated the door prize, won by Mrs. C. Hirte. The members voted to invite the Henry Shaw Cactus Society of St. Louis, to Chester for their annual picnic in July. The members also made button gardens at this meeting to be donated to the patients at the Missouri Baptist Hospital of St. Louis."

A small Club, doing big things.

Mrs. W. H. Esmay (Cor. Sec.) writes:

"The Freeport Cactus and Succulent Society celebrated its 6th anniversary on February 21, 1946. Our membership at this date is 24. We were invited to Mrs. Fred Beightol's charming home for a one o'clock luncheon to celebrate this birthday; 22 members were present. The oldest and youngest guests were presented with souvenior gifts in memory of the occasion. The study class was led by Mrs. E. Oberhardt, who gave a well thought-out paper on Haworthias. Each member brought her best specimens of this plant and a prize was awarded to Mrs. C. Dickinson. We held an election of officers and the following were elected for one year: President, Mrs. F. Beightol; Vice-President, Mrs. E. Oberhardt; Secretary, Mrs. C. Dickenson; Treasurer, Mrs. J. Ross; Librarian, Miss Mary Goldsmith; Corresponding Secretary, Mrs. W. Esmay. Our Club is planning a Cactus Show this summer and is busy growing a variety of succulents and cacti. Several members reported having blooms about to open on Epiphyllums."

We are always glad to publish the doings of your Club.

Mrs. Martha Maxwell (Pub. Chr.) writes:

"The Epiphyllum Society of America held their meeting March 21, in the Public Library in Los Angeles, California, with the President, Mrs. Cactus Pete, presiding. There was a good attendance, with many out of town members present. Mr. Scott Haselton introduced the speaker, Mr. William Taylor Marshall. Everyone interested in cactus in any form has no doubt heard Mr. Marshall lecture, and my few words are superfluous to describe the very interesting talk prepared by the speaker to explain the parts of the flowers, the difference in shape and the parentage of some of our well known hybrids. Space does not allow me to give more detailed account of Mr. Marshall's talk but it can be found in the Easter issue of the Epiphyllum Bulletin. Following the lecture, some very fine colored slides were shown by Mr. Haselton of some of the best known named varieties of Epiphyllums. Colored pictures are always enjoyed by the members as it gives us all a chance to be sure we have the correct names on our plants. After awarding several door prizes the meeting closed."

A fine talk, excellent ground work for future research.

Mr. Joseph Schnurr (Cor.) writes:

"The K.I.O. Cactus Club at their March meeting delegated me to inform our Journal readers and other friends about certain club members who are doing remarkable things for the benefit of the Society and our Club as a whole. Mrs. Harley Bickmore is one of the best and busiest speakers before local Garden Clubs on dish-garden arrangements. How does she ever find the time, she is so busy in other things? Mr. Stewart, the Superintendent of Krohn Conservatory deserves highest praise also for his cooperative, patient and constructive help in our meetings at the conservatory every month after our regular club affair takes place in some member's home. We feel here in Cincinnati that we have the finest Park Board in the country; Mr. Krohn, its president for over 30 years, is a member of our Club. Now we come to the Coles and in spite

of their protestations, I shall say that no two busier folks ever live from day to day. Charley and Mildred are on the go both day and night, delivering lectures before Garden Clubs and School classes. They bought their own projector, slides, etc., and never turn down any club or group that desires a talk on our hobby. If Charley can't go because of work, then Mildred goes alone. She has six lectures up to date and surely does a fine job. I am looking forward to meeting all our kind friends again at the next convention here in Cincinnati and wishing you all lots of good luck.

Every move in the right direction, the Convention.

Ethel Rush (Cor.) writes:

"The Los Angeles Cactus and Succulent Society held their April meeting at the home of the Rush's with a good attendance. A very definite interest is being shown in the botanical study work, with this session being devoted to stems and their structure and purposes. Each member is given a copy of the lesson to be filed for future reference. Many succulent collectors grow some of the Tradescantias, Zebrinas or Commelinas with their collections, because of the beauty of their foliage and a very interesting discussion was held. Mr. Marshall pointed out that to date, he has listed 54 non-technical books, written in English devoted to the subject of cacti and other succulents."

With that number of books we could all start the study of Cacti.

Margaret Radden (Pres.) writes:

"The Beverly Hills Cactus Club met January 2, at the home of Mrs. E. Berry, we all enjoyed her fine library and her fine greenhouse. Our gracious hostess had a nice gift for each member. Mrs. Berry will visit many of our cactus friends in California during April. February 5, Mrs. C. Schultz had a fine surprise for us, her husband built a miniature greenhouse for her outside of her kitchen window 4 by 3 ft. and 2 ft. deep, plants were lovely. Subject potting soil. March 5, our charming hostess, Mrs. H. Reth, had the meeting at her home. Her nice cacti are in three livingroom windows and in many other places. Seeds were given to each member to plant and report in three months. April 2, members had a treat looking at Mrs. Radden's garden, the wild flowers and many others were in bloom and was a gorgeous sight, we all went in the greenhouse which was enjoyed by all and would you believe it, we forgot our meeting. Door prizes were given by Mrs. Radden at every meeting."

Even if the meeting was forgotten, the plants will be remembered.

C. L. Wiese (Pub. Chr.) writes:

"The Cactus and Succulent Society of Oklahoma, at its March meeting, reported $51.00 in its treasury. How is that? An instructive lesson was given by C. L. Wiese entitled "Gleanings of Interest to Cactus Lovers," which ended with a "Floral Romance" and a vivid description of the wedding feast. Loys Lankford, President, and her husband returned from a visit with her father in Arizona, bringing back barrels, fishhooks, giants, rainbows, etc., as souvenirs to the members and specimens for our greenhouse collection including the Arizona Bee-hive with some 200 heads.

A FLORAL ROMANCE

A great phenomenon is enacted in pollenation which could be referred to as "The Coming Out Party" or let us call it "A Floral Wedding." All the instruments are wrapped in the bud and develop simultaneously until the day of days, in the spring, when it unfolds in a maze of beauty, the ovary forms the stage, the calyx guards the inner sactuary where the corolla in gaudy colors provides the tapestry for the bridal chamber. The petals now most alluringly colorful, often pungent with aroma, signal the event for the nuptial. As the festival progresses, liquid perfumes are served to butterflies and hummingbirds, bee-bread and sweet nectar is carried away in small bundles by bumblebees and small insects who in turn aid in dusting the stigma lobes with the pollen sperms. Every organ and function is perfectly planned and timed to perform in harmony with the rest to produce a masterpiece of beauty and a wedlock in serenity and perfection. The blossom, like the bridal veil, is worn just for this one great event. Soon as the cares, obligations and duties of life multiply the luster of the cheek is replaced with a care-worn face as the petals fall one by one, and that is the story of the flower in the plant family cycle, a parallel how new lives and new homes are created."

Very interesting and understandable.

Muriel Merrell (Ed., Pub. Chr.) writes:

"The Southern California Cactus Exchange held their meeting at Exposition Park, April 14, and that is a date that will long be remembered by the membership of the Exchange. Why? That was the afternoon Ladislaus Cutak took us, via color slides, on a personally conducted tour through the Missouri Botanical Gardens. To the 'Mum' shows, the rare orchids, the economic gardens, to the formal 'Italian Gardens' in both winter and summer, to the outer grounds and the Ozarkian Flora Reserve. Peonies, dahlias, roses, fruit trees bursting with ethereal spring-bloom and the promise of abundant harvest. We paused some moments by the great water-lily ponds with 'Lad,' while he affectionately recalled the patient hours his late father has spent among their floating beauty. Of their hybridization, of the homely task of clearing the too abundant pads, so that the lilies might be freed to spend their glorious blossoms. Cacti, succulents, palms, the library, Henry Shaw's country home, every one of the countless points of interest, these were the things we saw. 'Lad' was a wonderful guide, with disarming charm and an infectious sense of humor. His wisdom was of venerable vintage, yet, paradoxically he is a young man. His is the humbleness of knowledge, the simplicity of greatness and the priceless heritage to understand living things. The Southern California Cactus Exchange pays tribute to a potentially great Botanist, Ladislaus Cutak.

After that, Lad went Hollywood.

EDITOR'S NOTE: The absence of Spine Chats is due to his trip to Southern California.

FROM ARGENTINA

My garden is beautiful. Our Spring, your Fall. I should like to write at greater length but my English composition is atrocious. Most of my cacti are planted in the ground where they grow in the natural condition, but I have some specimens in pots. As an educational experiment I exhibited some of them in a central location, accompanied by a short description of the cactus, where I got it and how long it had been in the pot. It was a huge success. I could send you some pictures but it is three years since I have used the camera; no films.

DR. LIONEL DODDS.

EDITOR'S NOTE: As soon as films are available we will welcome more photos from Dr. Dodds.

Nomenclatural Changes and Innovations in the Crassulaceae

Part II

By ROBERT T. CLAUSEN

SEDUM KAMTSCHATICUM Fischer et Meyer. This attractive perennial of eastern Asia and adjacent islands is one of the more difficult species of *Sedum* to treat taxonomically. Hulten has regarded it as a subspecies of *S. Aizoon* L. In that opinion, he has been followed by Fröderström. Praeger (1921) on the other hand, not only recognized *S. kamtschaticum* as a species, but also *S. Middendorffianum* Maximowicz. In addition, he described two more species, *S. Ellacombianum* and *S. floriferum*. The problem before us is what to do about these several "species."

Study of cultivated plants of *S. Aizoon* shows that it is a tall perennial with erect stems to 8 dm. high, with elliptic-lanceolate leaves, and many-flowered, compound cymes, normally with over one hundred, often as many as two hundred flowers per cyme. *S. kamtschaticum* on the other hand, has low, decumbent stems, not over 3 dm. high, spatulate or oblanceolate leaves which are always broadest above the middle and relatively few-flowered cymes, usually with less than fifty flowers. Praeger (1921) has reported sterile hybrids between *S. Aizoon and S. kamtschaticum*. In view of this evidence of possible genetical isolation, as well as the several correlated morphological differences, I am inclined to continue recognizing as species both *S. Aizoon* and *S. kamtschaticum*, realizing meanwhile that more evidence may alter this opinion and favor Hulten's interpretation.

Much variation occurs in the leaves of *S. kamtschaticum*, also to a lesser extent in the flowers. The differences, however, are only weakly correlated. Since plants with the different types of foliage seem to constitute interfertile populations which replace each other geographically, it seems reasonable to regard them all as variations of a single species and to designate the major geographical tendencies as subspecies. The following three subspecific combinations are necessary to express this point of view:

S. kamtschaticum subsp. **kamtschaticum** (Fischer et Meyer) R. T. Clausen, comb. nov. Based on *S. kamtschaticum* Fischer et Meyer, "Index Seminum Hort. Petropol. 7: 54(1841)."

S. kamtschaticum subsp. **Ellacombianum** (Praeger) R. T. Clausen, comb. nov. Based on *S. Ellacombianum* Praeger, Jour. Bot. **55**: 41 (1917).

S. kamtschaticum subsp. **Middendorffianum** (Maximowicz) R. T. Clausen, comb. nov. Based on *S. Middendorffianum* Maximowicz, Prim. Flor. Amurensis, p. 116 (1859).

Subspecies *kamtschaticum* occurs in northern Asia from Kamtschatka south to northern Japan, Korea and northern China and eastward across Siberia at least as far as the Irtysh River; subsp. *Ellacombianum* is known definitely only from the island of Hokkaido, Japan; and subsp. *Middendorffianum* occurs over a wide area in north-central and eastern Asia, in Siberia, Manchuria and Mongolia.

S. floriferum Praeger, mentioned previously, appears intermediate between *S. hybridum* L. and *S. kamtschaticum* subsp. *kamtschaticum*. It may be a hybrid of these two species.

Sedum luteoviride R. T. Clausen, sp. nov., subgeneris *Pachysedum*. Suffrutex, glaber, multiramosus, caulibus robustis, procumbentibus ad basin, rigide erectis ad apicem, viridis vel rubroviridis vel aetho-viridibus, 2-6 mm. in diam., longis ad 32 cm.; caulibus foliatis 23 cm. proceris, foliis per longitudinem inaequaliter in zonis; foliis alternis spiraliter insertis, divari-

KEY TO THE SUBSPECIES OF S. KAMTSCHATICUM

A. Leaves spatulate, 7-25 mm. wide, crenate or dentate with usually 4 or more teeth on each margin ..... B
  B. Leaves dentate or crenate-dentate, dark green; flowers yellow or orange-yellow, 15-18 mm. in diam.; follicles dark brown, 5-6 mm. long ..... *S. kamtschaticum* subsp. *kamtschaticum*
  BB. Leaves crenate, light green; flowers yellow, 10-14 mm. in diam.; follicles light brown, 4 mm. long ..... *S. kamtschaticum* subsp. *Ellacombianum*
AA. Leaves narrowly linear or linear-oblanceolate, 2.5-10 mm. broad, crenate-dentate towards apex with 1-4 teeth on each margin ..... *S. kamtschaticum* subsp. *Middendorffianum*

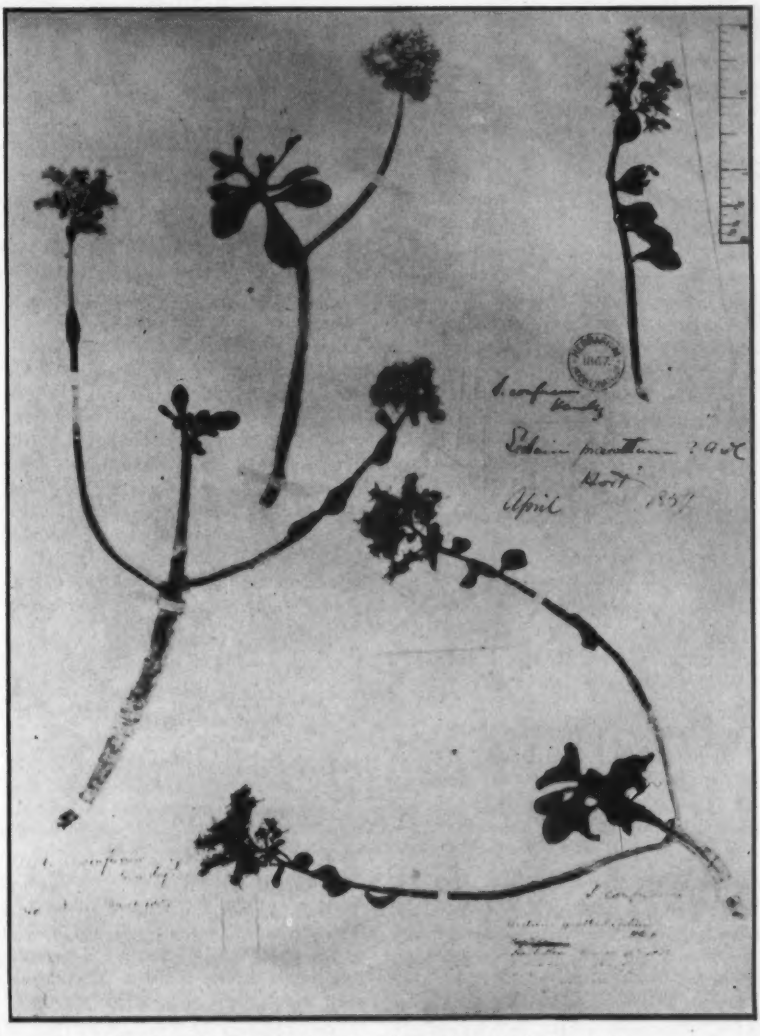


FIG. 47. Specimens of *Sedum confusum* in the herbarium at Kew. The lower right specimen is the type.

catis, oblongo-ellipticis vel subspatulatis, obtusis, breve-calcaratis, planis, lucidis luteo-viridis, aliquando rufis ad apicem, 5-16 mm. longis, 3-6 mm. latis, 1-2 mm. crassis; cymis terminalibus cum 7-30 floribus; floribus sessilibus vel in pediculis longis ad 2 mm.; floribus 10-12 mm. in diam., 5-partibus; sepalis luteo-viridibus, oblongis, obtusis, 2 mm. longis: petalis flavis, oblongo-lanceolatis, acutis, 4-6 mm. longis; staminibus flavis, 2-4 mm. longis; squamis transverso-oblongis, 0.5-0.6 mm. longis; pistillis viride-luteis, divaricatis, 3-4 mm. longis; seminibus subovatis, glabris, 0.8 mm. longis. Typus est planta culta, R. T. Clausen n. 5764 c in herbario Cornell University, Ithaca, N. Y. et in herbario R. T. Clausen. Specimen ab E. O. Orpet, Santa Barbara, California, originaliter est.

Sedum luteoviride is the species which was described and illustrated as *S. confusum* by Mrs. Rush in the issue of the Cactus and Succulent Journal for September, 1941, p. 146-148. For comparison, a photograph of the type of *S. confusum* Hemsley, prepared for me through the courtesy of Dr. E. J. Salisbury, Director of the Royal Botanic Garden, Kew, Surrey, is reproduced here as figure 47. The two plants to the

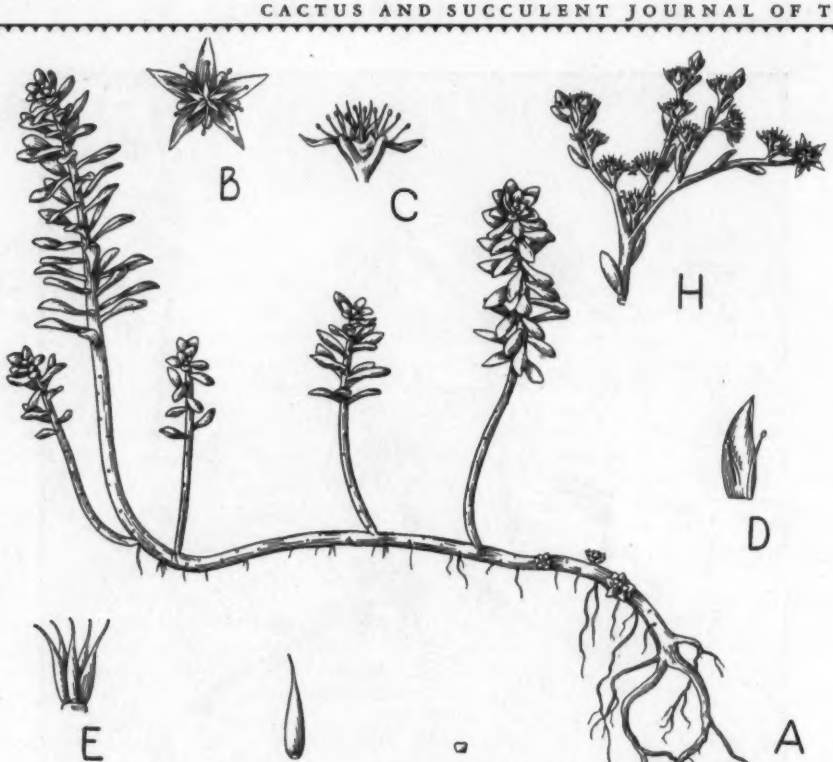


FIG. 48. *Sedum luteoviride*. A. Habit sketch of type plant (x 0.5). B. Flower from above (x 2). C. Flower from side (x 2). D. Petal and two stamens (x 3). E. Pistils (x 3). F. Single pistil (x 4). G. Nectar-scale (x 5). H. Inflorescence (x 1). Drawings by Miss E. M. Abbe.

right seem to be the ones on which Hemsley based his species. The one in the lower right may be considered the type. In my opinion, this is not the same as the plant described by Mrs. Rush, but is the plant which was figured by Praeger (1921) and which has long passed in gardens as *S. confusum*. I have received Hemsley's species from a number of sources. Large plants may become quite robust and appear like diminutive *S. dendroideum* DC. Small plants, particularly those which are well-watered, may be more lax and sprawling.

S. luteoviride differs from *S. confusum* in its smaller, thinner, more narrowly spatulate leaves which are not congregated in rosettes at the ends of the stems. A peculiarity of the foliage is the occurrence on the stems of alternating zones of long and short leaves. The differences in vegetative structures seem significant, but satisfactory floral distinctions have not yet been found. Such floral differences as I have noted do not appear sufficiently reliable to be employed in keys. The vegetative differences are indicated in the following table:

	S. CONFUSUM	S. LUTEOVIRIDE
Length of leaf-bearing part of sterile stems	1-6 cm.	3-16 cm.
Leaves of sterile stems	1.5-3.8 cm. long 0.8-1.4 cm. wide 2-3 mm. thick usually aggregated in rosettes at the ends of the stems with the leaves in the centers of the rosettes the shortest and those on the outside, lowermost on the stem, the largest.	0.5-1.6 cm. long 0.3-0.6 cm. wide 1-2 mm. thick more regularly arranged on the stems, irregular in length, long ones and short ones occurring in zones.

S. luteoviride has come to me from several cultivated sources, but always without specific data as to p'ace of origin in the wild. For that reason, it is impossible to designate a type locality. The best information still available is that published by Mrs. Rush concerning the source of one of her plants, namely that it came from Orizaba, Mexico. It is not clear whether the plant came from the wild there or perhaps was cultivated. For a time, I thought that *S. luteoviride* might be *S. aoikon* Ulbrich, but further study seems to preclude that possibility.

The plant designated as type is growing in the greenhouse of the Department of Botany at Cornell University, Ithaca, N. Y. The specimens designated as type are all part of one plant. The sheet in the type collection of the Department of Botany, Cornell University, should be regarded as the decisive specimen if question ever arises regarding the interpretation of the name. This is a sterile specimen, but shows to good advantage the vegetative characteristics on which the species is based. The accompanying drawings, figure 48, show the floral details. These should be used in conjunction with the specimen just mentioned in typifying *S. luteoviride.*

SEDUM OAXACANUM Rose, Contrib. U. S. Nat. Herb. 13: 299 (1911). Praeger (1921) received this species, correctly labelled, from the New York Botanical Garden. Since he mistakenly identified *S. australe* as *S. oaxacanum,* no name was available for plants which really belonged to the latter species. Accordingly, he described as new, with a degree of doubt because no flowers were available, the plant received from New York, naming it *S. polyrhizum.* Plants in cultivation which match Praeger's description and figure of *S. polyrhizum* also match the type of *S. oaxacanum* which came from the Sierra de San Felipe in Oaxaca. For that reason, *S. polyrhizum* Praeger should now be assigned to synonymy under *S. oaxacanum.*

SEDUM PLATYPHYLLUM Alexander, Cactus and Succulent Journal 14 (5): 77 (1942). The name of this choice species is not invalidated by *S. platyphyllum* (Schrenk) Hamet, Candollea 4: 17-24 (1929), since Hamet did not cite the necessary reference to Schrenk's publication of *Umbilicus platyphyllus.* For that reason, *S. platyphyllum* (Schrenk) Hamet is not to be regarded as validly published.

Sedum polystriatum R. T. Clausen, nom. nov. Based on *S. pulchellum* Aznavour, Magyar Bot. Lap. 16: 17 (1917), not *S. pulchellum* Michx. (1803). *S. polystriatum* occurs in the region of Van, Turkish Armenia. It is related to *S. tristriatum* Boiss. et Heldr., from which it differs in having the petals cuspidate and striate with 11-13 (not 3) striae, the sepals half as long as the petals, the pedicels shorter than the calyx and the stems glabrous below.

Sedum stenopetalum Pursh subsp. **nesioticum** (G. N. Jones) R. T. Clausen, comb. nov. Based on *S. nesioticum* G. N. Jones, described from the Gulf of Georgia, state of Washington and said to be confined to islands in the northern part of Puget Sound in Washington and British Columbia. The plants of this subspecies are characterized by being larger and more robust than those of typical *S. stenopetalum,* the leaves are glabrous, not-papillose, and the inflorescences on well-developed floral shoots tend to be paniculate. Plants of subsp. *nesioticum* from Lummi Island, Whatcom County, Washington, grown in the garden at Ithaca, N. Y., for eight successive seasons, retained their distinctive characteristics and were quite distinct from typical *S. stenopetalum* which was grown under the same conditions. The differences are of a minor sort, however, largely of degree, and some specimens from western Washington appear to be somewhat intermediate. For these reasons, and since the two populations seem to replace each other geographically, they are now treated as subspecies.

Sedum stenopetalum Pursh subsp. **stenopetalum** (Pursh) R. T. Clausen, comb. nov., based on *S. stenopetalum* Pursh, Fl. Am. Sept. 1: 324 (1814). This name is necessary for designation of the typical subspecies of *S. stenopetalum.* This is the subspecies which occurs in the Black Hills, Rocky Mountains, Cascades and Sierra Nevada.

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A Cactus Collector Goes to Peru

Part II

By JOHN F. AKERS

Peru may be divided roughly into several climatic zones. Along the coast runs a strip of barren desert that borders one of the bluest oceans in the world. "Cerros and lomas," or foothills and spurs, cut across this desert and form the lowly beginnings of the lofty Andes. Between groups of hills lie the lifeless "pampas" or plains. Cutting across this coastal zone are the valleys of the persistant streams which descend the western slope of the Andes. In these valleys are located the principal cities of Peru. At the extreme north lies Tumbes with its hot, tropical climate. Going south, the next town of importance is Talara, situated among sand dunes and looking exactly as the Sahara Desert is supposed to look. Here are located the famous Peruvian oilfields with their wells set among drifting dunes of sand similar to the setting of wells in distant Arabia. Farther south is Piura, a quaint colonial town that is still living in a past age. From Piura the Peruvians are building a road to Río Marañon which will open up a botanical paradise. Chiclayo, one of the fastest growing towns in Peru, is noted for its fine straw work and its many sub-tropical fruits. Trujillo, the third largest city, is a general center of interest. Near the outskirts is Chan Chan, the capital of the pre-Inca civilization. The nearby Chiclin museum is one of the best archeological museums in South America. Inland from Trujillo lie Cajabamba, province of many new cacti, and Cajamarca, the northern capital of the Incas. In the latter town is found the famous room that Pizarro ordered filled with gold. Farther south is Chimbote, the best harbor in Peru, and the terminus and loading docks for many coal mines. Paramonga is in the center of the sugar cane fields. Very colse to Paramonga is the Forteleza, or pre-Inca fort. At this point a road leads inland to Huaras and the "Switzerland of Peru." Seventy miles north of Lima is Huacho where San Martín declared the independence of Peru. Inland from Huacho is a road leading to Sayán, Churín, and Oyón where many rare and beautiful cacti are found.

Lima is the largest city on the west coast of South America, and it is the center of population as well as the coastal center of Peru. Roads lead inland to cross the high Andes in two places: one, through Canta leading directly to Cerro de Pasco, and the other through the valley of the Río Rimac to Matucana and Oroya. Chosica, Lima's winter resort, 25 miles from the heart of the city is also located in this river valley. The sierra cactus belt begins at Chosica and extends to nearly 12,000 feet in altitude. A side canyon from Chosica leads to the Santa Eulalia Valley, home of many new and rare cacti. About half way to the summit of the Rimac canyon lies Matucana, type locality for *Matucana Haynei*.

South from Lima, cacti are encountered in the Caracoles hills as well as on the hills around Quilmaná. The road passes by Pisco and Peru's finest hotel, and then through Ica, a fruit and date growing center. From Ica south the towns are comparatively small and are separated by barren pampas. Mollendo is the largest town south of Ica and is the seaport for the second largest city—Arequipa. Here the road goes inland to the Puno or high plains, and branches go to Lake Titicaca, Bolivia, Cusco, and Machu Picchu.

Although rain rarely falls on the coastal deserts, during the winter months of June, July, August, and September the clouds hang so low that the hills are perpetually bathed in mists. Soon these barren summits become green, and wild flowers spring up out of the flour-like soil. These four months of fog and mist keep alive the cacti in the desert canyons. The southern deserts are most barren and only near the ocean where morning fogs dampen the soil are there any cacti.

The sierran zone or western mountain belt has its seasons reversed. Rain falls nearly every day during the summer months of January, February, and March, but the winter months are hot and cloudless. With the exception of the canyons containing perpetual streams, the western Andes are more desolate than any of the desert mountains in the western United States. In all of the sierran zone with a breadth of over fifty miles in some places, and an altitude of from 3,000 to 18,000 feet, there are no trees to be seen and very little brush of any kind. At the lower border of this zone and in the canyons grow flat-topped, thorny acacias, scrubby pepper trees, eucalyptus, willows, and other species. At

about 8,000 feet where more rain falls, the sierra becomes covered with short grasses and bromeliads. At about 11,000 feet the cacti disappear as well as the bromeliads, and with the exception of short alpine grass and plants, nothing is seen until near 13,000 feet where *Tephrocactus floccosa* appears. It is in the sierran zone that the great bulk of the cacti grow.

The third zone consists of the great central troughs or valleys lying at an altitude of 7,000 to 12,000 feet. At the lower elevations there is a climate of perpetual spring, and here there are great fruit producing sections. At the higher elevations the cold and windswept pampas act as grazing lands for sheep and llamas. A dirt road travels this upland area from Tingo Maria on the north through Huánuco, Cerro de Pasco, Oroya, Tarma, Huancayo, Ayacucho and Abancay to Cusco at the south. With the exception of the district around Oroya, type locality of *Oroya peruviana,* practically nothing is known about this area. Travelers have told me that thick stands of cacti surround Ayacucho.

The fourth and last zone is the montaña, or jungle, consisting of rain forests of great tropical beauty. But little is known of this area, although it is a potential agricultural area of great value.

Almost all botanical explorers and cactus collectors have traveled the same three passes. The northern one from Piura to Huancabamba, the central, from Lima to Oroya, and the southern, from Mollendo through Arequipa to Bolivia. How Humboldt ever got started exploring the northern pass is difficult to understand; but exploration of the other two has mainly followed the railroads as an easy means of ingress. Early collectors undoubtedly took trains to the various principal towns at which food and lodging could be obtained, and from these centers botanized the surrounding country. Chosica, Matucana, and Oroya were three of the main centers of investigation.

Being probably the first cactus collector with a private means of transportation, I have succeeded in penetrating many of the seldom-traveled canyon roads and have found areas of beautiful but undescribed cacti whose existence has never been suspected. But cactus collecting in Peru is not easy. The deserts are hot and waterless, the sierra is step and arduous, and the roads are poor and difficult. Many a time I have spent the whole day jogging along at 10-15 miles an hour in second gear, with the radiator boiling like a steamer. Every new genera, species, or variety has been transported to our home in Lmia to grow side by side with cacti from other localities. In this way differences that are not easy to keep in mind or that seem distinct in the field, can be readily studied. Surprisingly, cacti from the barren deserts stand considerable moisture during the growing season, and in most cases the plants have flowered well in cultivation and have set seed. Of all the cacti collected, the hairy *Tephrocactus* such as *O. floccosa* are the most difficult to keep in good condition. Other high altitude plants, for example, *Oroya peruviana,* do well at Lima. Due to the greater humidity near the coast, the collected cacti lose some of their brilliant coloring, but the new growth usually maintains its full, rich shades.

It is very easy for us armchair botanists and horticulturalists who have never visited South America to cast doubts and aspersions upon the findings of some of the more rugged explorers. When we can collect and observe plants with our own eyes, it is much easier to distinguish microscopic differences that may or may not exist. Take for example, *Armatocereus,* and study it with a critical eye. Here is a group of plants that grow in a manner quite different from the other *Lemaireocereus.* The plants are composed of very short joints; indeed I have seen a single, unbranched plant twenty feet high composed of five-inch joints one set upon the other like a pile of blocks and have wondered what supported the whole mass.

Peru has many beautiful cacti, but I believe the genus *Espostoa* contains the most showy plants. It is difficult to look at a snowy white ten-foot tall *Espostoa* and not be moved by the fever of acquisition. Next in beauty and attraction is a new genus of cerei that are bristly, hairy, or finely spiny and most attractive in color. The genus *Binghamia* or *Haageocereus* also contains many fine plants. The dwarf *Melocactus* of Peru are especially attractive with their bright red cephaliums. *Matucana haynei* has always been a favorite cactus and is well worthy of its place in the finer collections. The genus *Mila* contains nearly the only small type of clumping cactus found in Peru and furnishes some very interesting plants. *Borzicactus* or *Loxanthocereus* are our best bloomers as well as being colorful plants, and they are seldom without a few firecracker red flowers. The Peruvian *Trichocereus* are all interesting as are the *Opuntia,* and *Tephrocactus.* Genera such as *Arequipa, Browningia, Oroya, Islaya, Erdisia, Neoraimondia, Corryocactus,* etc., also furnish many colorful plants. I hope to describe and illustrate in the near future many of our old favorites as well as some new species.

To be continued

SPECIAL THIS MONTH

Foreign Cactus Seedlings—all different. Eight for $1.00, 15 for $1.50, 32 for $3.00. All named. This is the time to transplant them. Also just received the following that I have been out of for a long time: *Cochemia setispina, Ferocactus coloratus, F. gracilis, Pachycereus Pringleii* at prices and terms in Catalog No. 7.

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